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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,726	07/02/2002	Franz Laetmer	10191/2129	6136
26646	7590	11/26/2003	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			HASSANZADEH, PARVIZ	
			ART UNIT	PAPER NUMBER

1763

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/031,726

Applicant(s)

LAERMER ET AL.

Examiner

Parviz Hassanzadeh

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7/2/02.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 17-20, 28, 29, 31-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Yin et al (US Patent No. 6,352,049 B1).

Yin et al teach a plasma processing apparatus (Fig. 8) comprising:

an inductively coupled plasma source coupled to an inductive coil 608 for generating a plasma within a process chamber 102 for processing a substrate 610 disposed inside the chamber, wherein a gas port 314' can provide a process gas into the chamber; and

a remote plasma source coupled to the process chamber 102 via an inlet port arranged on the top of the chamber, wherein the remote plasma source can be a microwave plasma source 208 coupled to a dielectric tube 202 (Fig. 2A) such a sapphire (ceramic) having an inlet 204 coupled to a gas source and an outlet 206 coupled to the process chamber (column 9, line 56 through column 11, line 30; and column 19, lines 16-45).

further regarding claims 32-36: the apparatus of Yin et al further may include a grid 316 (Fig. 7A-D) for filtering charged species from the remote plasma tube (column 16, line 3 through column 18, line 23).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(e) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 21-27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yin et al (US Patent No. 6,352,049 B1) in view of Steinhardt et al (US Patent No. 4,489,362).

Yin et al teach all limitations of the claims as discussed above except for explicitly disclosing the details of the microwave generator including cavity resonator, tuning devices, directional coupler.

Steinhardt et al teach a remote plasma source (Fig. 1) comprising a microwave generator I (magnetron 1'), waveguide and cavity resonator 2, tuning unit 4, adaptation device (shown between tuning unit 4 and tube 5), and a microwave reflected power absorber 3 (directional coupler) including a water load (column 5, line 30 through column 6, line 25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ the remote microwave plasma generator source as taught by Steinhardt et al in the apparatus of Yin et al for generating a remote plasma source in a dielectric tube which is capable of being coupled to a process chamber.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Redeker et al (US Patent No. 6,170,428 B1) teach an apparatus including an inductively coupled plasma reactor coupled to a remote microwave plasma source;

Shang et al (US Patent No. 5,788,778); and Herchen et al (US Patent No. 6,248,206 B1) teach an apparatus including a capacitively plasma reactor coupled to a remote microwave generator source;

Rarnes et al (US Patent No. 6,239,553 B1) teach an apparatus including an inductively coupled plasma reactor coupled to a remote inductive plasma source;

Kumagai (US Patent No. 5,916,455) teach an apparatus including an inductively coupled plasma reactor coupled to a remote inductive plasma source;

Wild et al (US Patent No. 5,954,882) and Agarwai (US Patent No. 6,095,085) teach a remote microwave plasma source coupled to a process chamber.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parviz Hassanzadeh whose telephone number is (703)308-2050. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703)308-1633. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

P. Hassanzadeh
Parviz Hassanzadeh
Primary Examiner
Art Unit 1763

November 18, 2003